Reference List

NWA6162 – 89 grams
Depleted Olivine-phyric Shergottite

Figure 1 a, b: *Two views of NWA6162 (photo by Stefan Ralew of Chladni's Heirs). Cube is 1 cm.*

Figure 2: *Photo of 2.7 gram slice of 6162 with apparent vuggy regions. Photo from Classen web site.*

Introduction

NWA6162 is a small rounded stone completely covered with thin black fusion crust (figure 1). It was found in 2010 near Lbirat in southern Morocco and purchased by Stefan Ralew and Martin Altmann (Meteoritical Bulletin). It contains vugs with black shock-melted glass.

Figure 3: *End cut of NWA6162 showing prominant olivine megacrysts and black-glass with vugs (photo by S Ralew). Surface is about 3-4 cm across.*

Petrography

The interior of NWA6162 is fresh and unaltered (figures 2 and 3). The texture consists of large (3 mm) anhedral magacrysts of olivine set in a fine-grained groundmass of intergrown pigeonite and maskelynite with accessory chromite, pyrrhotite and merrillite (Kuehner et al. 2011). It has prominent vugs with black glass (probably shock glass) (figures 2 and 3). Mineral chemistry is reported in Meteoritical Bulletin.

Mineralogy

Olivine: Cores of olivine megacrysts are $Fo_{81.4}$

Pyroxene: Pyroxene is pigeonite $Wo_5En_{72}Fs_{23}$ to $W_{10}En_{62}Fs_{28}$

Plagioclase: Maskelynite An_{62-66}.

Chemistry

Kuehner et al. (2011) reported the chemical composition of sawdust (table 1). The REE indicate it is highly depleted in incompatable elements (such as LREE).

Radiogenic age dating

Not yet.

Table 1. Chemical composition of NWA 6162

reference	Kuehner11	
weight		
SiO2 %	46.57	(a)
TiO2	0.33	(a)
Al2O3	4.05	(a)
FeO	18.32	(a)
MnO	0.47	(a)
MgO	21.75	(a)
CaO	5.09	(a)
Na2O	0.53	(a)
K2O	0.02	(a)
P2O5	0.29	(a)
S %		
sum		
Sc ppm		
V	112	
Cr	5632	
Co	42.5	
Ni	223	
Cu		
Zn		
Ga		
Ge ppb		
As		
Se		
Rb	0.37	
Sr	28.7	
Y		
Zr		
Nb		
Mo		
Ru		
Rh		
Pd ppb		
Ag ppb		
Cd ppb		
In ppb		
Sn ppb		
Sb ppb		
Te ppb		
Cs ppm		
Ba		
La	0.25	(b)
Ce	0.66	
Pr	0.098	
Nd	0.61	
Sm	0.43	
Eu	0.22	
Gd	0.85	
Tb	0.18	
Dy	1.28	
Ho	0.28	
Er	0.82	
Tm	0.12	
Yb	0.75	
Lu	0.12	
Hf	0.46	
Ta		
W ppb		
Re ppb		
Os ppb		
Ir ppb		
Pt ppb		
Au ppb		
Th ppm		
U ppm		
technique:	*(a)XRF (b) ICP-MS*	

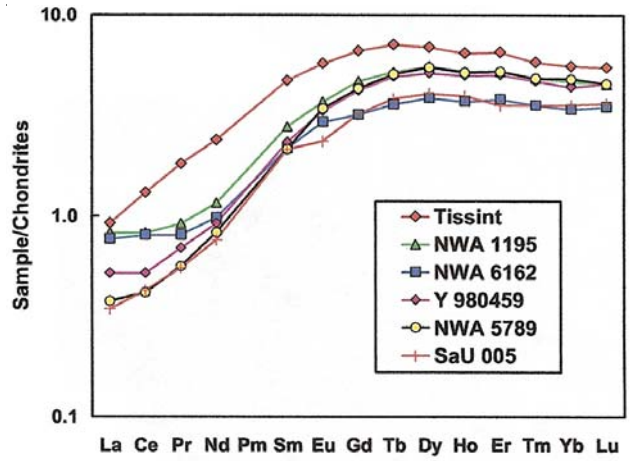

Figure 4: *Normalized rare-earth-element diagram for depleted shergottites including NWA6162 (Irving et al. 2012).*

Cosmogenic isotopes and exposure ages

Not yet

Other Studies

Kuehner et al. (2011) give the oxygen isotope analysis (Delta ^{17}O = 0.28 ‰).

Processing

Sawn

References for NWA6162

Figure 5: *Another piece ?*